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1/77

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PT 86

08NOV02 E761853-1 D03002
P01/7700 0.00-0226012.3

2. Patent application number

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0226012.3

07 NOV 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Martin CLIVE-SMITH.

WOOTTON PARISH
LEEK WOOTTON
CV35 7QX

04/11/21/43/003

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

A CAR CARRYING CONTAINER

5. Name of your agent (if you have one)

Martin CLIVE-SMITH.

as above.

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)Date of filing
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
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a) any applicant named in part 3 is not an inventor; or
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Description

6

Claim(s)

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Priority documents

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Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

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I/We request the grant of a patent on the basis of this application

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J. Clive

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TITLE - A CAR CARRYING CONTAINER.

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In the field of collapsible flatrack containers there is a type of flatrack adapted for carrying cars. Typically the flatrack is 40ft long and will carry 2 or 3 cars. Recent developments in containers have allowed them to grow from a standardised 40ft length to a 45ft length, and in some countries even longer at 58ft. The handling devices and the transport vehicles for containers up to this time have been adapted to carry 40ft lengths but now longer 45ft length spreaders for top lifting and 45ft cell guides in ships for carrying and guiding 45ft containers are increasingly common.

To maintain compatibility between 40ft containers and 45ft containers it is necessary to provide corner posts or at least handling apertures at the 40ft positions on 45ft long containers. This then allows 40ft spreaders and perhaps 40ft trailers or rail wagons to engage with the corner fittings located at the 40ft position, even though the container extends to front and rear by another 2½ ft. However a problem arises when lowering such 45ft containers down into the cell guides of ships.

Within the ship, a 45ft container slides down the cell guides rubbing its corner fittings on the surfaces of the cell guides. In this way a container can be safely and rapidly lowered down into the vessel in a correct and accurate position on top of another 45ft container. If the spreader is a 40ft long spreader then when attached to the 45ft container, accuracy of location is ensured within the cell guides, and once detached from the container, the spreader can be raised up out of the cell guide.

A problem arises when a 40ft spreader is used to pick up a 45ft container. In the case of dry freight containers which have a solid roof when lifting one of these containers out of the cell guide the 40ft spreader can be lowered down from the crane into the cell guide and located, not easily, but fairly safely into the 40ft fittings. It is relatively safe because if the spreader twistlocks should fail to engage with the corner fitting the roof of the dry freight container deflects and supports the spreader and protects the cargo inside. However in the case of a flatrack where there is no roof, a 40ft spreader coming down into a cell guide and missing the top corner fittings can easily impact the cargo which is exposed in such open frame containers.

Therefore it would be an advantage if some form of protection could be provided to the cargo on a flatrack.

One consideration to provide protection would be to insist that 45ft spreaders be used in cell guide operation, and indeed this is the norm. In this way a 45ft spreader could come down easily guided within the cell guides of the vessel and locate directly

into the 45ft corner fittings located on the corner posts and safely pick up the flatrack without damaging the cargo. However we live not in an ideal world and 40ft spreaders are still in use even on 45ft cell guide vessels. Furthermore, to maintain compatibility with existing container fleets there must also be corner fittings located at 40ft position because land based operations where there are no cell guides still use 40ft spreaders. A flatrack then with posts and corner fittings at 45ft and 40ft positions would be an advantage if the technological problems could be solved.

Flatracks are generally collapsible, in that when the cargo is removed from the base, the end frames and corner posts can be folded down onto the base and the units stacked one upon another for economical storage and transport. If one is to have corner posts at 40ft and 45ft positions one ends up with 8 corner posts which must all be folded down perhaps one on top of the other adding to the height of the folded stack. It would clearly be an advantage if one could devise a flatrack which had handling apertures at 40ft and 45ft positions which could easily fold down for retrograde activities and be compact when folded.

The present invention claims a flatrack having at one or both ends of its rectangular base a structure comprising two or more posts there being at the top of the structure two or more top fittings located to mate with connecting devices presented to the flatrack at two or more different lengths.

By way of an example of the present invention

In figure one can see a side elevation of a typical collapsible container 40 which is 40ft long and has a base (1) and a pair of corner posts (2) located at either end. On the top of each corner post there is a top fitting (3) comprising of rectangular hollow box with handling apertures (4) formed in the three outermost surfaces of the top fitting. Likewise there is a bottom fitting (5) located at the four bottom corners of the flatrack 50.

In figure one there can be seen three small cars (6) placed on the base (1) of the flatrack. The height of the flatrack is limited by the fixed height of the end frames (48), the height being defined by the height of top fitting (3) above the ground.

In figure two there is seen a flatrack 8 similar to flatrack (50) but extended at either end by base extensions (7), taking the overall length typically to 45ft or more. Suspended above the flatrack (8) is seen a crane spreader (9) with twistlocks (10)

which would typically engage with top apertures 4 of fittings (3) for lifting the flatrack (8). One can see that if the twistlock 10 should not line up with the top aperture 4 of fitting (3) but approach the flatrack over to one side as denoted by (9') with twistlock positioned at (10') then serious damage could occur to the roof of car (6).

When the flatrack (8) is placed in the cell guides 11 of a vessel, the cell guides (11) control the position side to side and longitudinally of the flatrack (8). However if a 40ft spreader such as (9) is lowered down inside the cell guide it can still swing from one side to the other as denoted by dotted line (9') and cause damage to car (6). If the spreader were made say 45ft long as denoted by dotted line (9'') with twistlocks located at (10'') and (10'') then no damage would occur to the cargo (6) because the spreader (9'') would be guided by the cell guides (11). However there are unfortunately no spreaders available with 45ft length and twistlock (10) at 40ft position. Thus the cargo (6) of a flatrack (8) could be protected from spreader impact but not cannot be safely lifted because of the need to use a 40ft spreader (9).

In figure three we see a perspective view of an embodiment of the present invention. There is seen a flatrack (12) with bottom side rails (13) forming the main part of base (14) and bottom posts (15) located at the 40ft position and adjacent to them bottom posts (16) at the 45ft position. In this example the posts (15) and (16) are joined together structurally by a structure 47.

The posts (15) and (16) are joined to the base by means of hinges (19) which connect the posts (15) and (16) to the side rails 13. Posts 15, 16 comprise hollow box sections out of which telescope upper posts 55, 56. Upper posts 55, 56 are capped by fittings 3, 21 and joined top rail (17) is extended inboard by protection bar (18). Gates 28 are seen at the near end closed and at the rear end 28' open. They are attached to the posts 16 by hinges 30 which allow them to rotated 270 degrees from closed position 28 to a folded back position not illustrated along side the side of flatrack 12. Between side rails 13 is seen a floor 24 comprising a corrugated steel sheet. Above the base 14 is seen a deck 22 comprising side rails 49 joined by a floor 23 comprising a corrugated steel sheet. The deck 22 can be suspended by chains 41 connected by pins 42 to side rails 49, the chains passing over pulley wheels 39 mounted on the posts 55. The other end of the chains 41 is anchored to posts 15 at pin 43.

In figure 4 there is seen a side elevation of the flatrack 12 in figure 3. Comparing this flatrack with the flatrack 8 in figure 2 one can see that in operation a spreader such as (9) or (9') can be used to pick up the flatrack (12) by engaging with the 40ft corner fittings (3) or the 45ft corner fittings (21). Furthermore should 40ft spreader (9) be lowered down inside cells guides or otherwise and miss locate on the top corner fittings (3) the protector bar (18) helps to deflect the spreader (9) and its twistlocks (10) from the cargo. The posts 55,56 can be seen in dotted line to illustrate their raised position from inside posts 15, 16. When raised fittings 3, 21, and top rail 17 and bar 18 move to position in dotted line 3', 21', 17, 18..

In figure (5) one can see the position of cars (25) supported on floor (24) and more cars (26) located on the floor (23) of deck (22). The cars (26) can be seen to be projecting above the height of top fitting (3) and (21) until posts 55, 56 are raised to cover them. Once raised to the desired position, posts (55, 56) are locked by a bolt shot through aligned holes formed in posts 15, 16 and posts 55, 56 and thereby being able to sustain lifting, racking and stacking loads placed upon fittings 3 or 21.

In figure 6 there is seen an end elevation of flatrack 12 showing hinges (19) floor (24) extended corner posts (55), (56). The orientation of the hinges is such that the axis of pivot pin (27) lies in a horizontal longitudinal direction and the posts (15) and (16) can fold transversely together towards the floor (24). To support the posts 16 in the erect position shown and keep them in place under transport and handling loads gates (28) are locked together at their centre by a spigot (29).

In figure 7 the gates (28) have been swung open through 180 degrees allowing access for cargo onto the floor (24) of base (13). The floor surface (23) of deck (22) is seen in the raised position allowing a car such as (25) to drive in and out underneath any cars such as (26) placed on floor (23).

In figure 8 there can been seen the same end elevation as in figure 6 and 7 but here the corner posts (55), (56) have been retracted into corner posts (15), (16) and the end plates (28) have been folded back through 270° to line up with the side of longitudinal sides of the flatrack (12). The deck 22 has been lowered and floor surface (23) can be seen lying on floor (24). To collapse the flatrack 12, the posts (15) and (16) are from left and then from the right of the view folded down indicated by arrows A and B towards the floor (23) about pivot pins 27. It can be appreciated that the protector bar (18) and top rail (17) can fold easily with the corner posts (15)

and (16) and furthermore the end gates (28) can fold with the posts and lie neatly within the folded module.

It is envisaged that posts 15, 16 might be formed as a single post and that fitting 3, 21 or another similar fitting might be located at another convenient position along top rail 17 or bar 18.

In figure 8 one can see an end elevation of a stack of five flattracks 12 with posts (15) and (16) folded as described earlier. The flattracks (12) can be linked together through their fittings (5, 20) and top plate (29) of hinge (19) by known twistlock means and then top lifted by the uppermost top plates 59.

In figure 10 there is seen a side elevation of one end of the flattrack (12). The corner posts (15), (16) are erect and locked in place with gate (28) locked together. Posts 55, 56 are raised along with top rail (17), fittings (3), (21) from retracted position shown in dotted line (17'), (18'). To raise the posts 55, 56 up and down from within posts 15, 16 there is a hydraulic ram (35) which can be pumped up so that the rod (36) acting through a pin (37) by which means the rod is attached to top rail (17) pushes up on the top rail and raises the upper structure 60 comprising 55, 56, 17 and 18. Once raised to the desired height the posts 55, 56 can be locked in place by bolt 38 passing through cooperating apertures formed in the posts 15, 16, 55, 16 denoted by line 38. When it is desired to retract the upper structure 60 the bolt (38) is withdrawn and the structure lowered by means of gravity acting on the hydraulic cylinder (35) or by pumping the cylinder downwards.

The raising and lowering of the upper structure 60 has an additional function. Pulley wheel (39) can be seen attached to the bar (18) by means of a bracket (40). Over the pulley is arranged a chain or wire rope (41) which at one end is pinned at (42) to deck (22), and at the other end is fixed to post (32) by a pin (43). As the upper structure is raised up and down by the hydraulic cylinder (35), the chain (42) acts so as to raise and lower the deck 22 from a lower position (22') nested within base 13 up to a desired height as illustrated (22). Once at the desired height it can be pinned in place by a lock (44) located on post (15) on which the deck (22) can rest for solid transport.

Although the flattrack described herein has telescopic corner posts 55, 56 this of course is not entirely necessary and fixed height corner posts are envisaged. Other

embodiments might include a shaped deck 23 to maximise the slope of cars 26 placed upon it. The floor 23 might be replaced by open transverse bars 61 seen in figure 5 to support on the wheels of cars 26. The bars 61 might be located at positions 62 such that when nested within base 13, the cars drive along floor 24 until at rest in the transverse bars 62. The bars 62 instead of being fixed to deck 22 might be adjustable to allow tilting of the cars 26 at an angle to be selected when the deck 22 is raised clear of floor 24.

It is not necessary to have built in hydraulic rams 35 or pulley wheels 39 and chains 41 - the deck could be raised and lowered by external or auxiliary means such as a crane, fork truck or specially adapted device as indeed the upper structure 60.

The base 13 could be arranged to be telescopic such that the 45ft long flatrack could be extended or retracted to some other length. 40ft and 45ft lengths are ideal and common standards but other lengths are envisaged from time to time.

The deck 22 could be raised to a high level to for a protective cover or roof over a vehicle 25 or cargo placed on the floor 24. The end gates 28 could be fully panelled to provide a degree of cargo protection and side curtains could be fitted hanging from bars 18 extended full length between posts 55, the curtains then being connected along the bottom to side rails 13 to enclose the cargo space.

One end of deck 22 can be raised before the other so that vehicles 26 can be driven up the slope and thus require less lifting work to be done by the rams 35.

The deck 22 and base 14 can act together when nested and perhaps locked together as a single structure to support larger heavier vehicles or cargo. Vehicles wider than the gap between the erect posts 15, 16 can be driven between the posts 15, 16 by canting them out beyond the vertical erect position illustrated. Indeed the posts could be arranged to be folded outward to perhaps a horizontal position to provide an access width greater than the internal width of the base 14.

The deck 22 can be made removable. The floor 23 can be made in separate elements to allow individual adjustment of slope between one section and another to accommodate different shapes and sizes of cars.

17

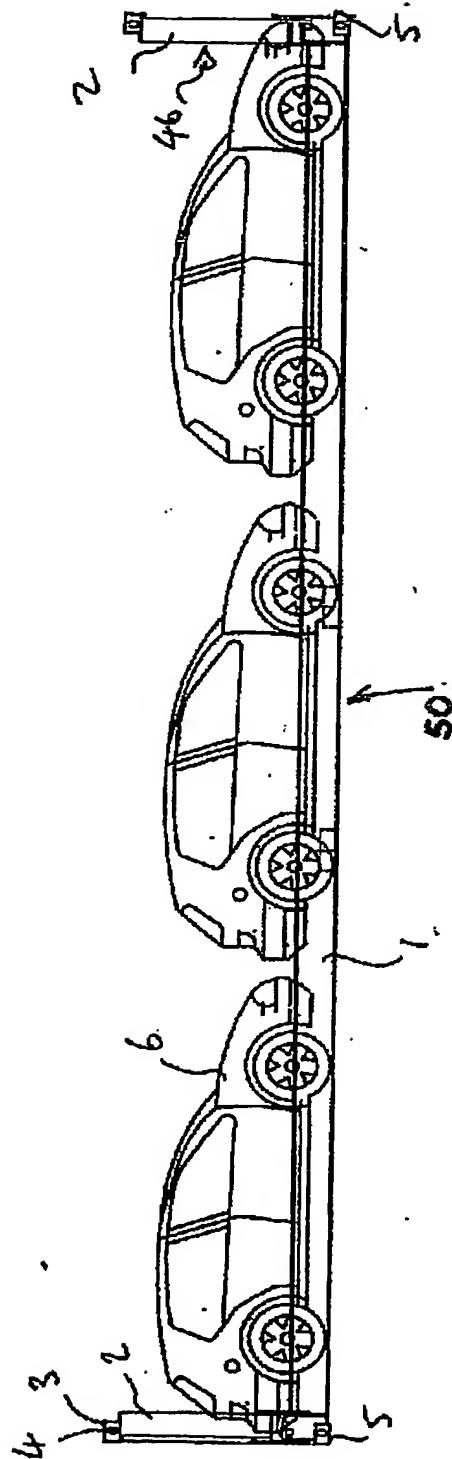
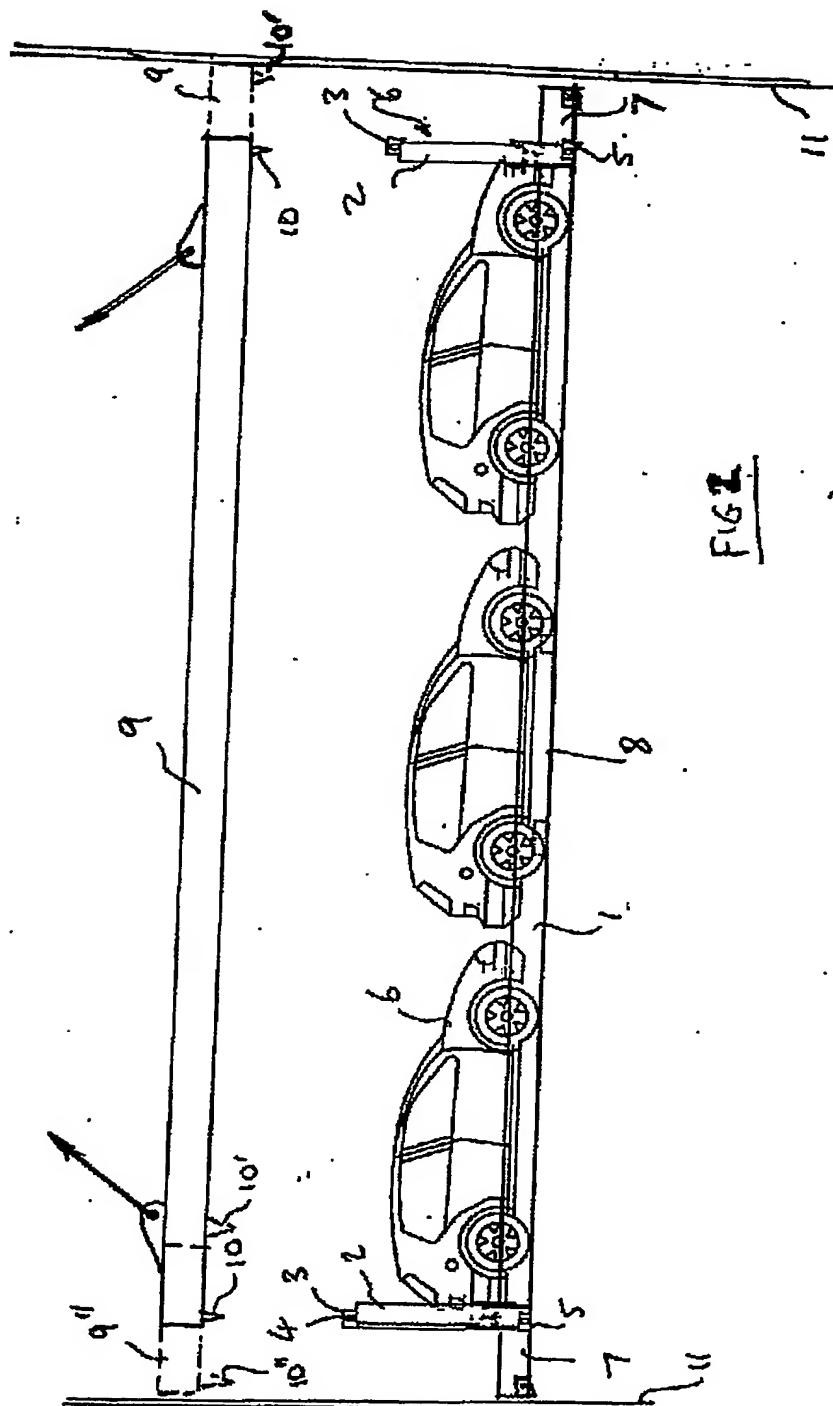
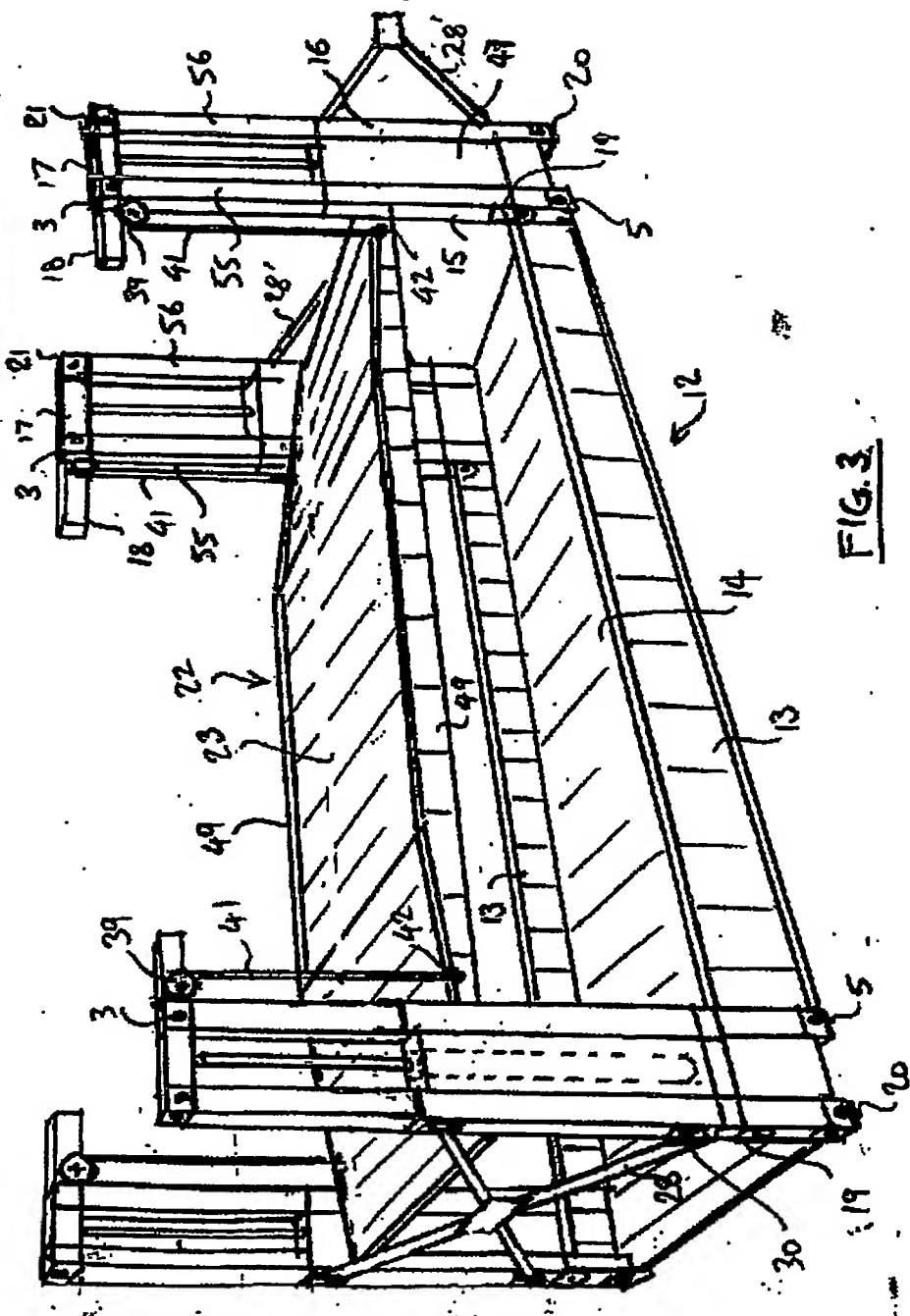


FIG 1

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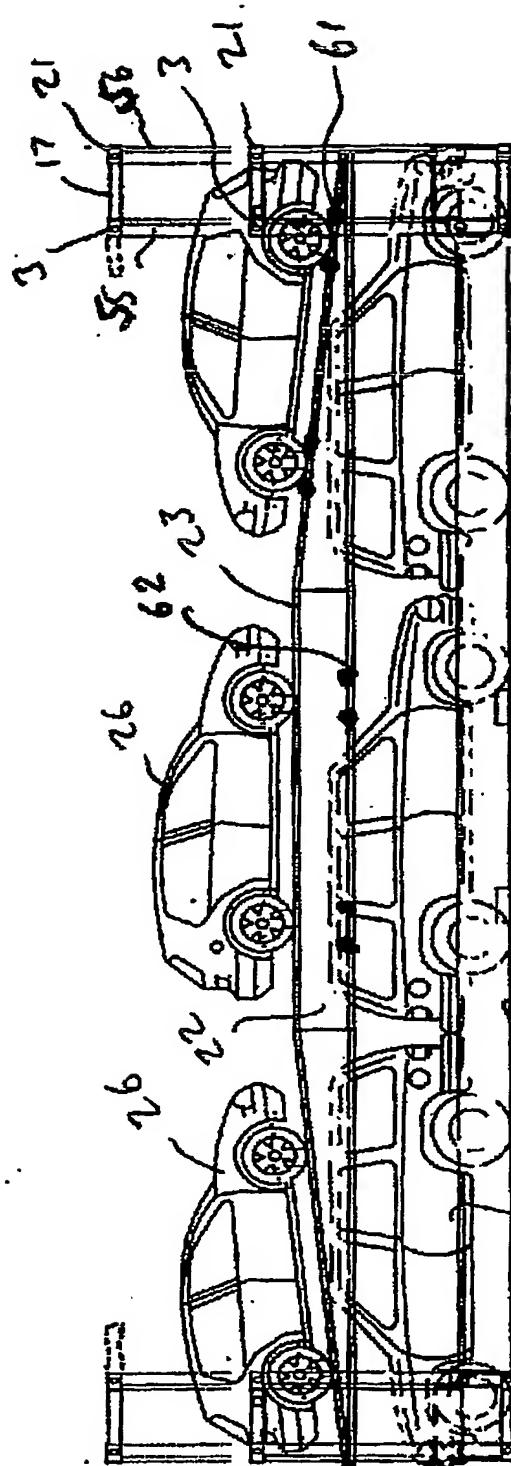


FIG.5.
24
25

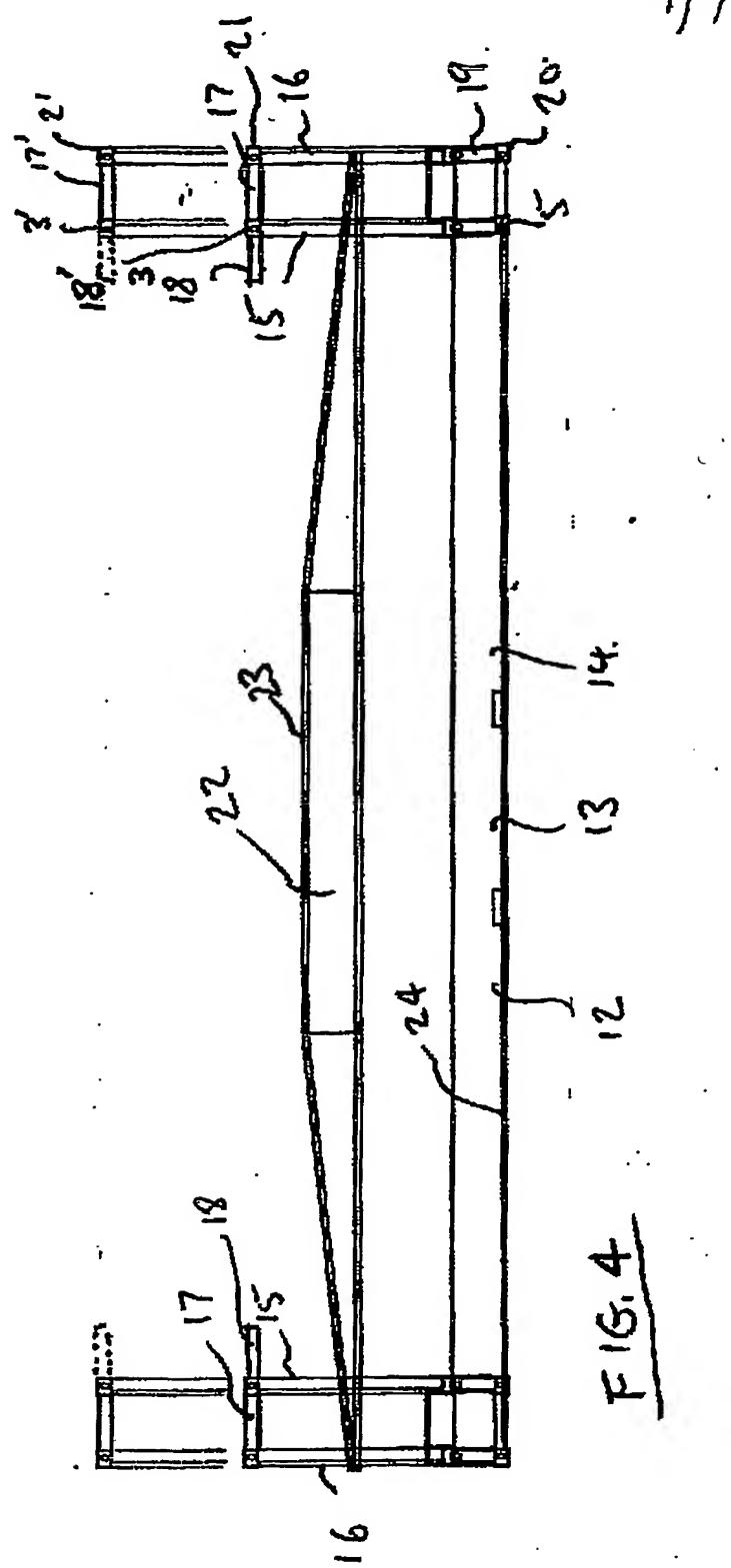
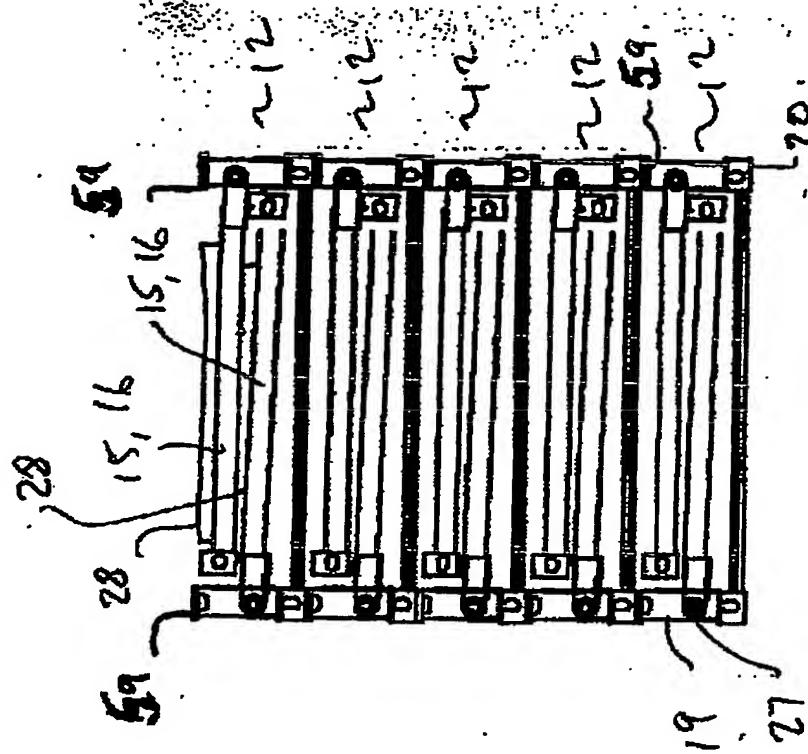
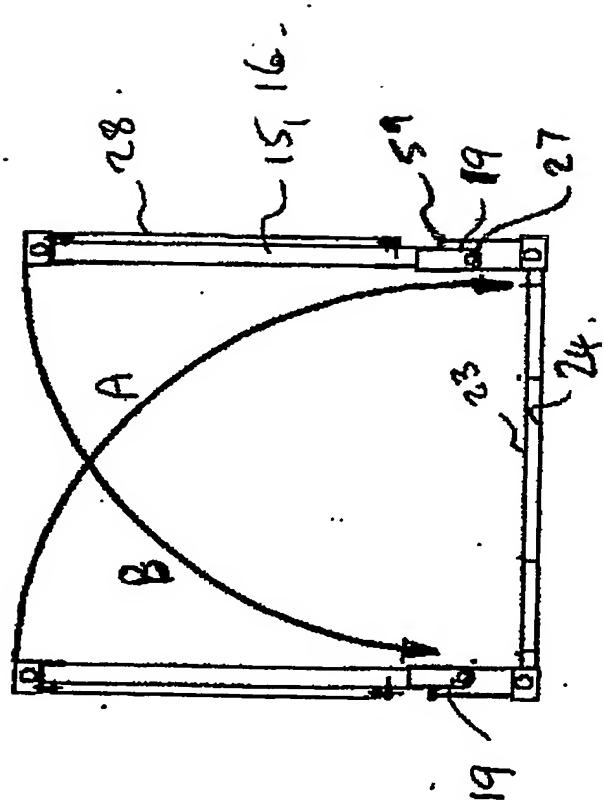


FIG.4.
16

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FIG. 9FIG. 8

67

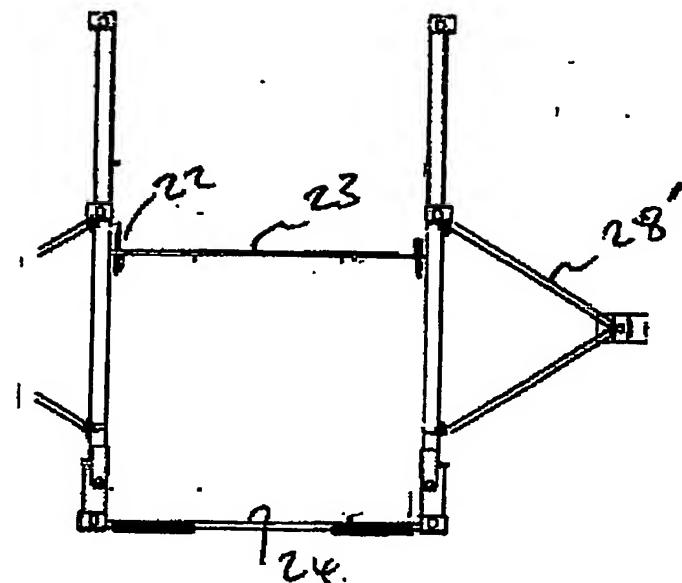


FIG.7.

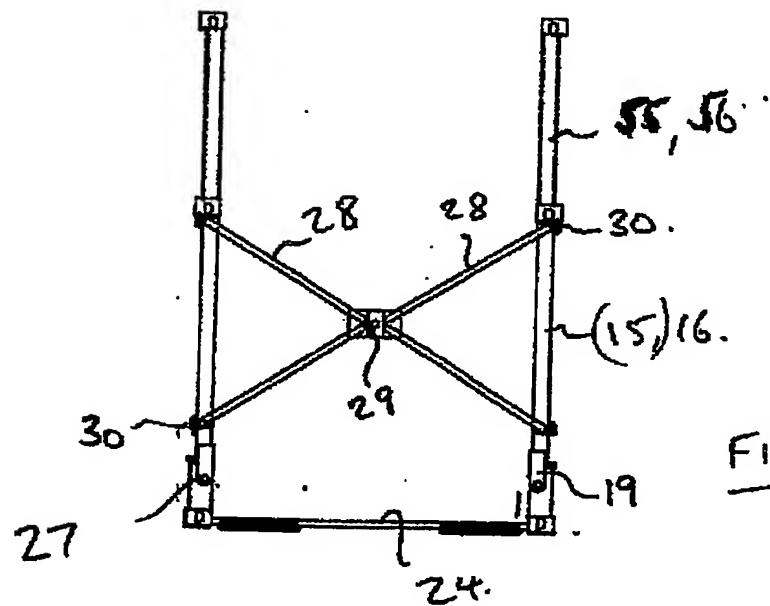


FIG.6.

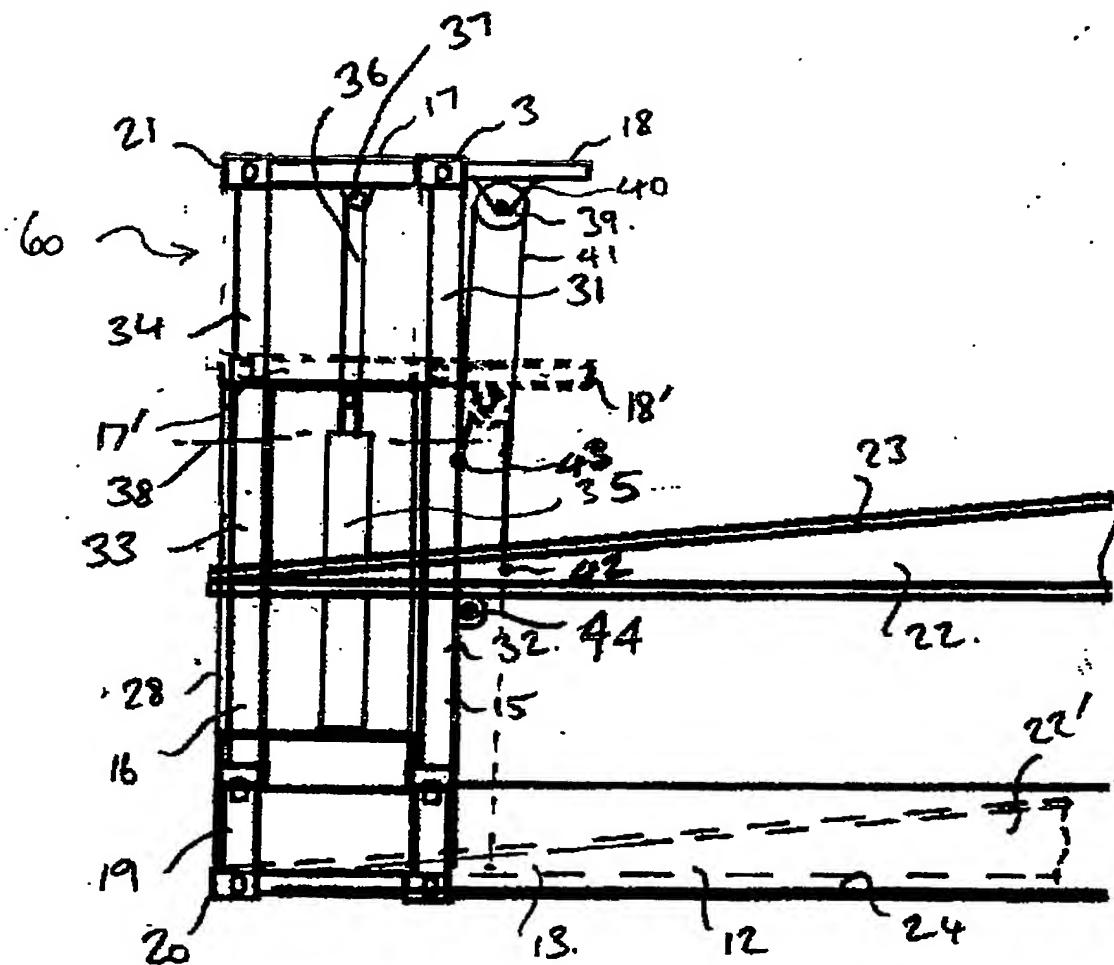
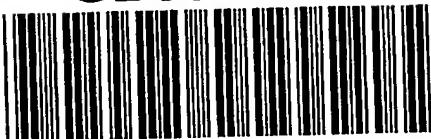


FIG. 10.

PCT Application
GB0304805



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